

City of Milwaukee Infant Mortality Summit 2011

Reducing Preterm Births: Clinical Interventions

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Introduction

- 2007 Milwaukee 7th worst for infant mortality among 53 US cities
- Disparity between infant mortality for AA and whites one of the worst in the nation
- The focus of the summit is reducing prematurity a significant contributor to infant mortality
- Emphasis is on the physicians and nurses role in reducing prematurity

Objectives

- Understand the contribution of prematurity to infant mortality
- Understand the cost of prematurity to society, the family and the preterm child
- Understand ways prematurity can be reduced
- Be able to incorporate these methods into clinical practice

USA Infant Mortality

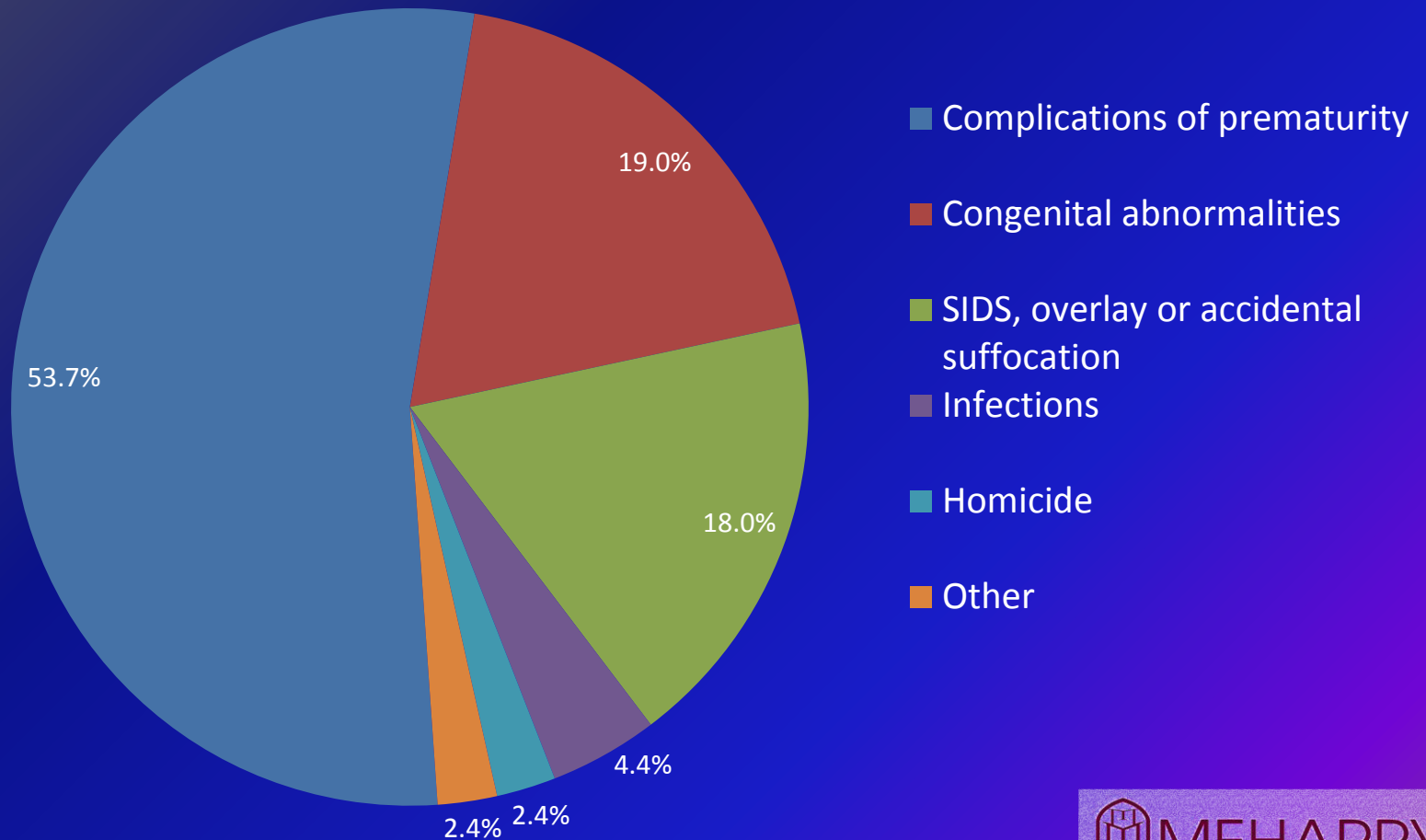
2008 leading causes:

- Complications of prematurity: 44.9%
- Congenital abnormalities 30.1%
- Sudden infant death syndrome and accidental suffocation: 11.8%
- Infections: 4%
- Other 9.2%

MHD, based on CDC data

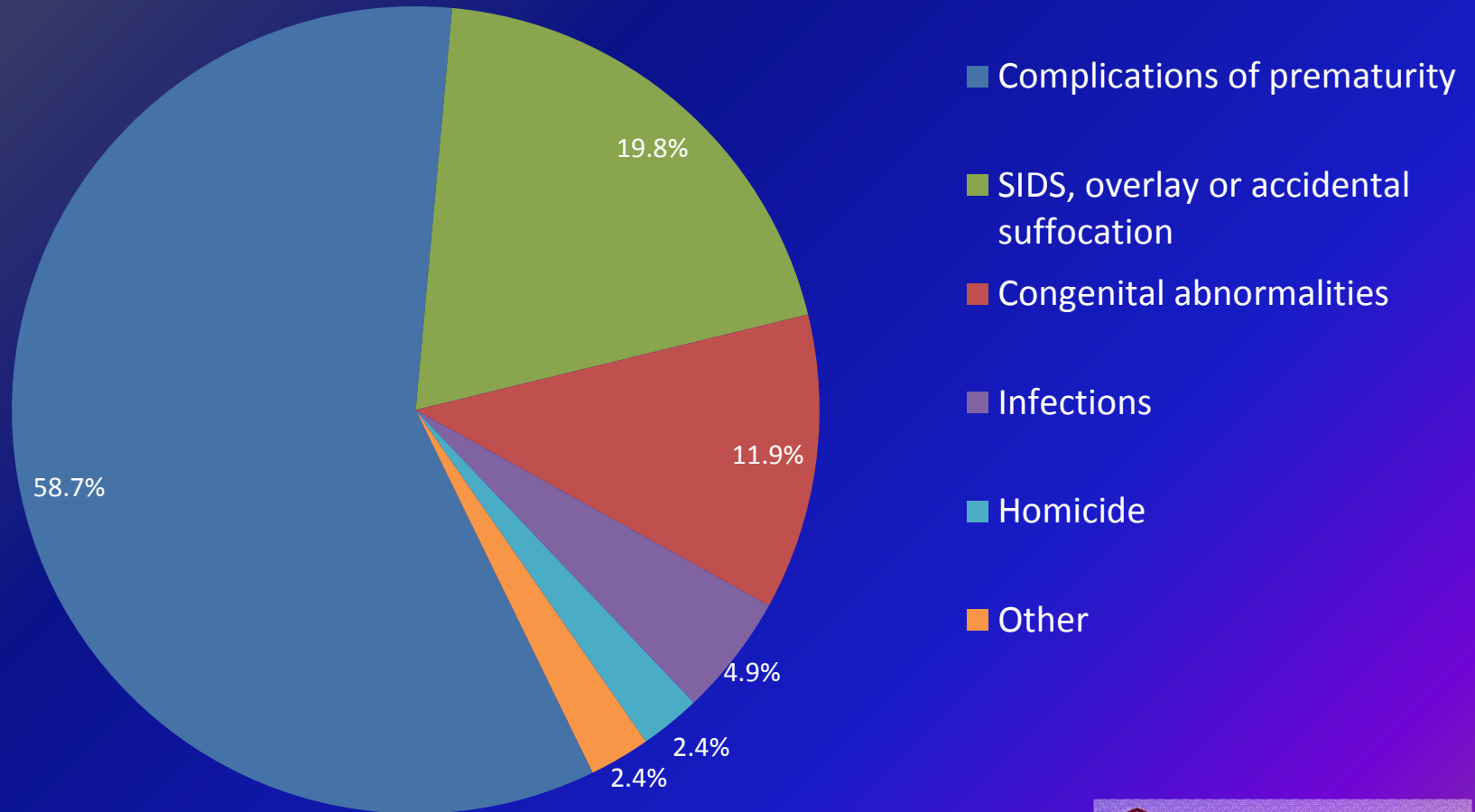
Milwaukee

Cause of Infant Death: 2005-2008



Milwaukee

Cause of Black Infant Death: 2005-2008

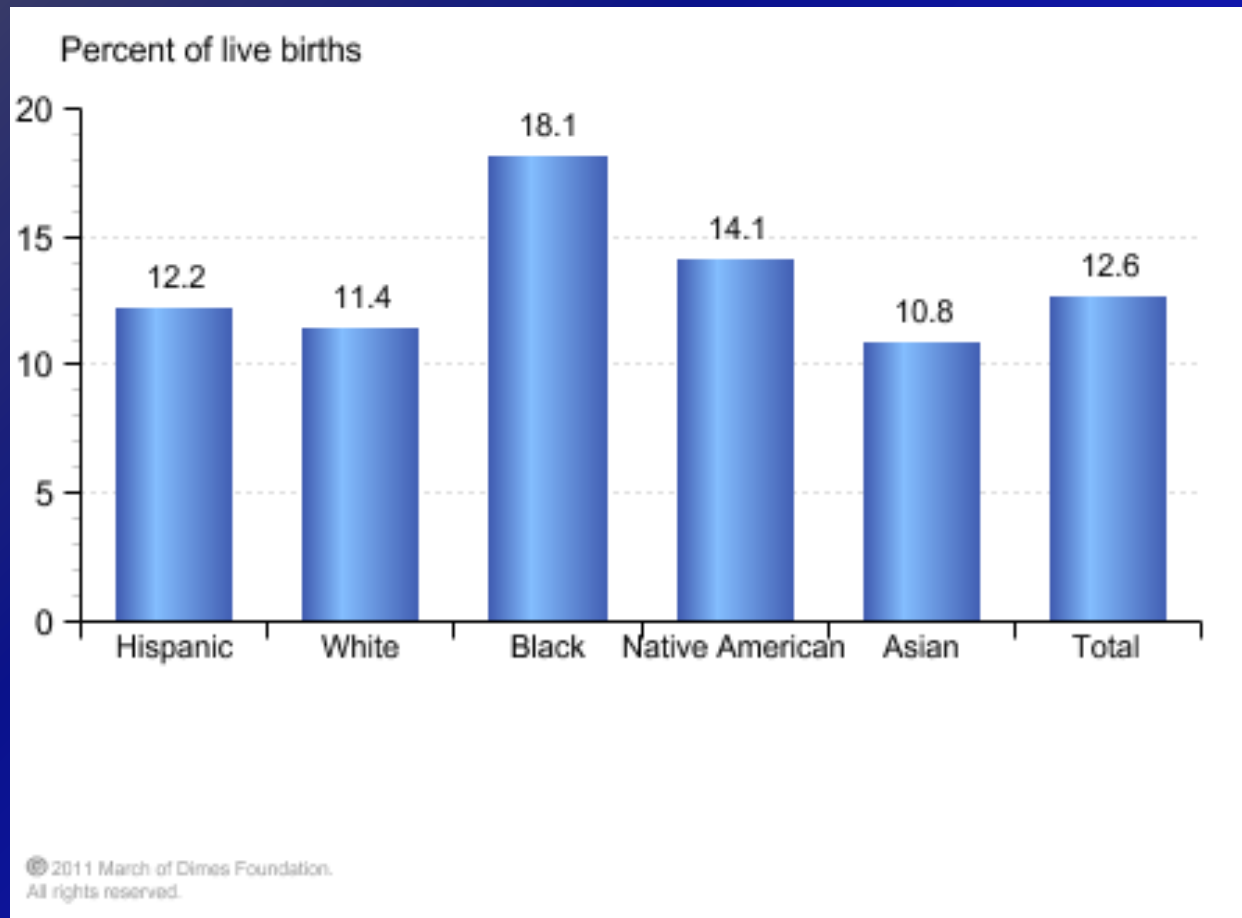


Preterm Birth (PTB)

- Birth before 37 weeks gestational age
- 21% rise since 1990, peaked at 12.6% in 2006
- 2008 -12.3 % of births in the US (550,000 births)
- 80% spontaneous, 20% iatrogenic
- Low birth weight (LBW) < 2500 gm
- Very low birth weight (VLBW) < 1500 gm
- Extremely low birth weight (ELBW) < 1000 gm

Preterm Birth by Race/Ethnicity

US, 2006-2008 Average

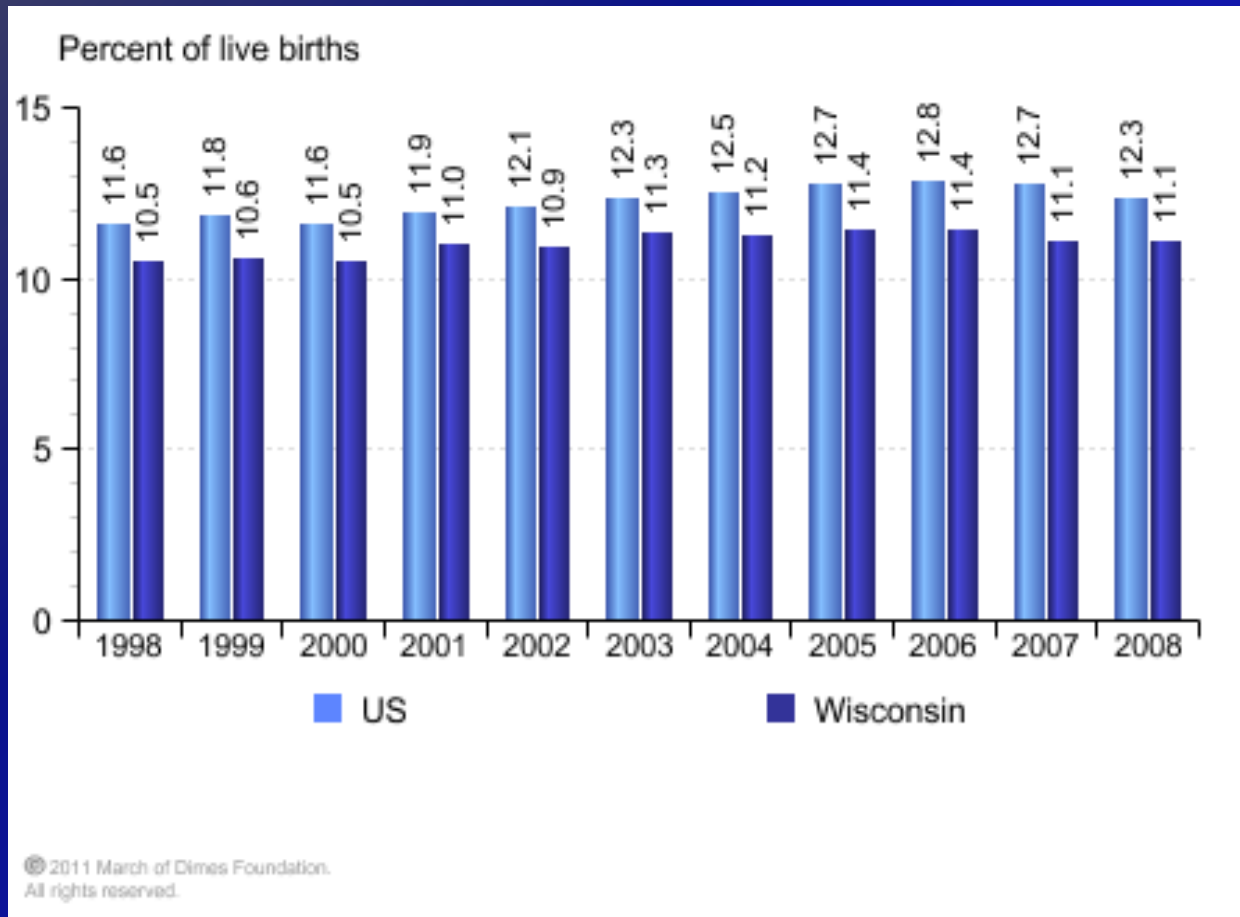


All race categories exclude Hispanics. Preterm is less than 37 completed weeks gestation.

Source: National Center for Health Statistics, final natality data. Retrieved April 28, 2011, from www.marchofdimes.com/peristats.

Preterm Birth

US and Wisconsin, 1998-2008

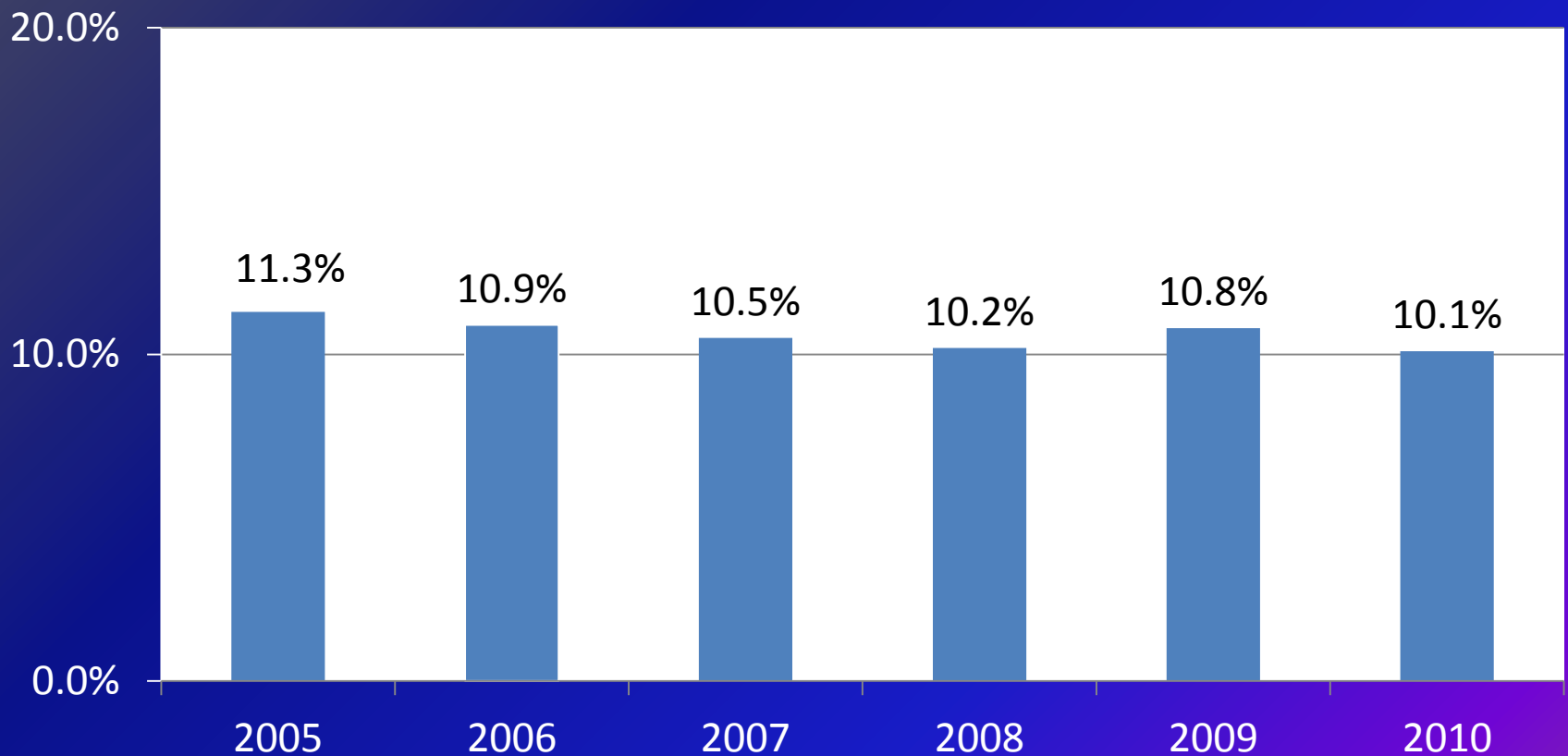


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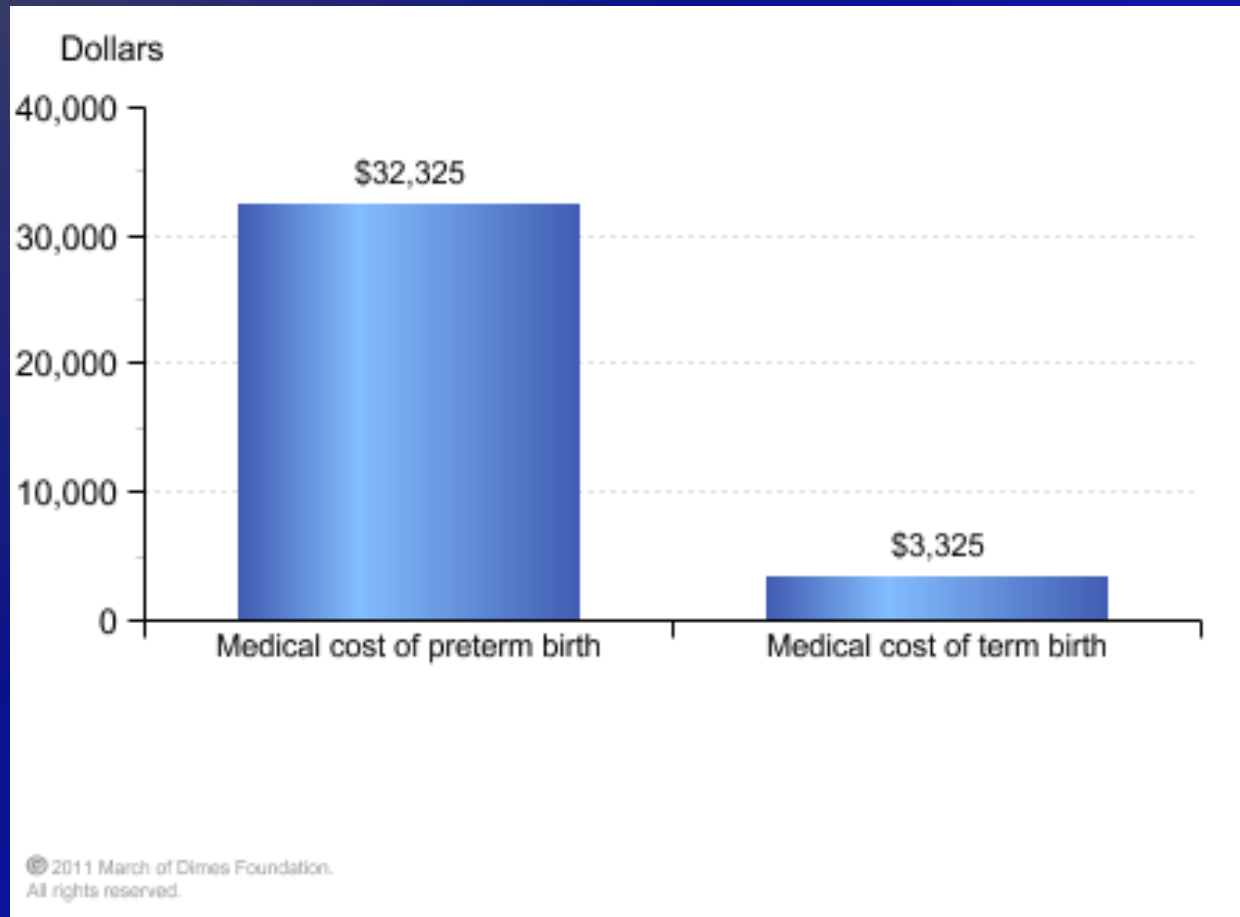
Preterm Birth Milwaukee

% of Pre-term Births in Milwaukee



Cost of Preterm Birth

US, 2005



Source: Institute of Medicine. 2007. *Preterm Birth: Causes, Consequences, and Prevention*. National Academy Press, Washington, D.C. Published and unpublished analyses. Retrieved April 28, 2011, from www.marchofdimes.com/peristats.

US Cost of Preterm Birth

Cost \$51,600 per preterm birth:

Medical care \$33,200

Maternal delivery \$3,800

Early intervention services \$1,200

Special education \$2,200

Lost productivity \$11,200

Annual cost 26 billion dollars

Cost of Preterm Birth

- Family- worry, grief, guilt, disruption, lost productivity
- Premature infant/child:
 - Respiratory distress/BPD, Asthma
 - Neurodevelopmental impairment (CP)
 - Learning disability
 - Recurrent illnesses
 - SIDS
 - Poor growth
 - Vision and hearing impairment
 - Adult health- insulin resistance, HTN,
 - Decreased reproductive capacity, increased PTB

Milwaukee Preterm Birth

2005 – 2008

- 4851 premature births
- Cost \$250,311,600

Risk Factors for Preterm Birth

Risk Factors – Slide 1 of 2

Prior preterm birth

African-American race

Age <18 or >40 years

Low socioeconomic status

Cervical injury or anomaly

Uterine anomaly or fibroid

Short cervix or Premature cervical dilatation (<2 cm)

Over distended uterus (multiple pregnancy, polyhydramnios)

Vaginal Bleeding

Periodontal Disease

Excessive uterine activity?

Risk Factors for Preterm Birth

Risk Factors – Slide 2 of 2

Cigarette Smoking

Substance Abuse

Absent/Late Prenatal Care

Short Interpregnancy Intervals

Anemia

Poor nutrition, low prepregnancy weight

Bacteriuria/urinary tract infection

Genital/systemic infection

Strenuous work

High personal stress

ACOG Progesterone

- Progesterone should be offered to women with a singleton pregnancy and history of spontaneous PTB
- Progesterone can be considered for women with cervix <15 mm
- Routine cervical length not recommended

ACOG 2008



PREGNANT Trial

- International multicenter randomized placebo controlled, double blinded study
- 32,091 women screened with vaginal US, 733 (2.3%) cervix 10-20 mm
- 465 asymptomatic women with short cervix 10-20 mm enrolled 19-23 6/7 weeks
- Vaginal progesterone bioadhesive gel 90 mg (n=235) vs placebo (n=223) daily until 36 6/7 weeks
- Reduced PTB < 33 weeks by 45%

Hassan Ultrasound Obstet Gynecol 2011

PRETERM BIRTH AND INFECTION

- Urinary tract infection is associated with an increased risk of preterm birth
- All pregnant women should be screened for asymptomatic bacteriuria and treated
- Women with history of frequent UTI should be placed on suppression - nitrofurantoin 100 mg HS
- Repeat urine culture each trimester
- Systemic infection also increases PTB

Preterm Birth and Cigarette Smoking

Women who smoke or are exposed to second hand smoke are at greater risk for:

- Spontaneous loss
- Preterm birth < 32 wks
- Low birth weight
- Premature rupture of membranes
- Placenta previa
- Abruptio placenta
- Stillbirth
- Sudden Infant Death Syndrome

Preterm Birth and Cigarette Smoking

- Cigarette smoking and drug use are often the only potentially modifiable risk factors for PTB
- 1.3 – 2.5 x risk of PTB especially < 32 wks
- Smoking cessation in the first trimester lowers rate of PTB to non smokers
- Pregnancy offers an opportunity for medical intervention
- Concerns over danger to the fetus serve as a motivator

Cigarette Smoking and Preterm Birth

- Provide pregnancy tailored counseling
- Brief interventions:
 - Information about smoking related risks
 - Frequent f/u to assess progress
 - Pregnancy specific or other manual
 - Sessions with a health educator
 - Video on risks and cessation

Cigarette Smoking and Preterm Birth

Cognitive behavior therapy

- Maternal feedback on fetal health status
- Measurement of smoking by-products
- Rewards/incentives
- Pharmacotherapy
- Hypnosis
- Significantly fewer PTB (RR 0.86 95% CI 0.74-0.98)
- Higher birth weight

Lumley Cochrane Database 2009

Management Pre-pregnancy

- Identify risk factors for PTB
- Counsel pt. and recommend modifications
- Optimize medical conditions
- Smoking/drug cessation
- Nutritional counseling/exercise
- Stress reduction
- Delay pregnancy
- Seek early prenatal care

Management First Trimester

- Screen for risk of PTB
- Address modifiable factors
- Smoking/drug cessation
- Screen for infection and treat
- Optimize medical therapy
- Nutritional counseling
- Stress reduction
- Discuss progesterone supplementation if eligible

Management Second Trimester

- Screen for risk of PTB
- Address modifiable factors
- Smoking/drug cessation
- Screen for infection and treat
- Optimize medical therapy
- Nutritional counseling
- Stress reduction
- Consider cervical length
- Start progesterone at 16 – 20 wks

Management Third Trimester

- Screen for risk of PTB
- Address modifiable factors
- Smoking/drug cessation
- Screen for infection and treat
- Optimize medical therapy
- Nutritional counseling
- Stress reduction
- Continue progesterone till 37 weeks
- Delay elective delivery till 39 weeks

Management Third Trimester

- If evidence of preterm labor tocolytic therapy
- Magnesium sulfate offers neuroprotection
- Avoid betamametic tocolytics
- Nifedipine is also an option
- Betamethasone therapy
- Bed rest not proven effective but we all do it!

Management Postpartum

- Counsel re risk of PTB next pregnancy
- Provide adequate contraception
- Encourage breastfeeding
- Encourage weight loss, good nutrition
- Encourage continued smoking/drug cessation
- Support stress reduction
- Encourage preconception care and early prenatal care next pregnancy

The Result - A Healthy Term Baby!

